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⑨ **Surgical clamp jaw cover.**

⑩ This relates to a cover (20) for a jaw (18) of a surgical clamp (10). The cover has an internal surface which is roughened so as to increase the frictional engagement of the interior surface of the cover with a surgical clamp jaw. The roughening of the interior surface of a cover may be accomplished as a true roughened surface (50) or may be in the form of a plurality of axially spaced, annular ridges (38) molded on to the internal surface of a tubular body of the cover.

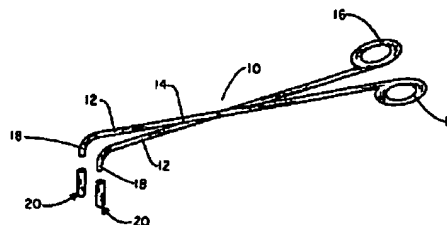


FIG. 1

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This invention relates in general to new and useful improvements in surgical equipment, and more particularly to a cover for a surgical clamp jaw which is specifically constructed so as to be retained on the surgical clamp jaw during use.

BACKGROUND OF THE INVENTION

During surgery, and particularly during vascular surgery, the surgeon typically grasps very fine and delicate sutures during the course of the operation. Conventional surgical clamps are used to grasp the sutures, but in order to protect against damage to the sutures, covers are typically used over the jaws of the clamp. These covers are typically flexible rubberlike tips or boots which slip over the ends of the clamp jaws.

Previously available covers are deficient in that when used in contact with the body, due to the heat of the body, the covers tend to expand and occasionally slip off the ends of the clamp jaws. For this reason, clamp jaw covers are typically made radiopaque so that in the event they are lost in the patient, they can be later found by an examination of an x-ray.

SUMMARY OF THE INVENTION

In order to prevent the accidental loss of a surgical clamp jaw cover, in accordance with this invention, there is provided a cover construction which increases the coefficient of friction between the inside of the clamp jaw cover and the clamp jaw to minimize the possibility of accidental slippage of the cover off of the end of the clamp jaw. More specifically, the coefficient of friction is increased by providing the cover internally with annular ridges which are adapted to interengage with serrations typically found on the ends of the clamp jaws.

On the other hand, a roughened surface may be provided on the inside of the clamp jaw cover.

In both embodiments of the invention, it takes considerable manipulation to remove the cover from the clamp jaw.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by reference to the following detailed description, the appended claims, and the several views illustrated in the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be described with reference to the drawings in which:

FIG. 1 is a perspective view of a typical surgical clamp having covers on the jaws thereof;

FIG. 2 is an enlarged cross sectional view of a prior art cover;

FIG. 3 is an enlarged fragmentary sectional view taken through a cover formed in accordance with this invention;

FIG. 4 is an enlarged sectional view of an end portion of a surgical clamp jaw having the cover of FIG. 3 mounted thereon in interlocking relation;

FIG. 5 is an enlarged vertical sectional view taken through a surgical clamp jaw cover open at opposite ends; and

FIG. 6 is an enlarged fragmentary sectional view taken through a cover having a roughened internal surface for frictionally gripping a surgical clamp jaw.

DESCRIPTION OF THE INVENTION

Referring now to the drawings in detail, reference is first made to FIG. 1 wherein there is illustrated a conventional surgical clamp generally identified by the numeral 10. The clamp 10 includes a pair of elongated arms 12 pivotally connected together as at 14 in crossing relation and terminating at first ends in finger receiving handles 16 and at the opposite ends in offset clamping jaws 18. The end portions of the jaws 18 are covered by covers 20 formed in accordance with this invention.

Reference is next made to the prior art showing of FIG. 2 wherein a cover 24 is illustrated. The cover 24 is formed of a flexible rubberlike material and includes a tubular body 26 and a rounded closed end 28.

The prior art cover 24 has a smooth interior and since the cover expands due to being heated by the body temperature, has a tendency to slide off of the respective jaws 18 notwithstanding the fact that the surgical clamp jaws 18 are typically provided on end portions thereof with serrations 30 as is best shown in FIG. 4.

Referring now to a preferred embodiment of the invention as shown in FIG. 3, there is illustrated a cover generally identified by the numeral 32 which like the cover 24 includes a tubular body 34 open at one end and closed at the opposite end by a rounded closure 36. The cover 32, however, differs from the cover 24 in that it is internally provided with a plurality of axially spaced annular ribs 38 which correspond to the serrations 30 of the surgical clamp jaws 18 as is best shown in FIG. 4. Because of this interlocking gripping relationship, it takes considerable manipulation to remove a cover 32 from a surgical clamp jaw 18.

Although a typical cover for a surgical clamp jaw has a closed end, such as the closed end 36, it is feasible to provide a cover which is open at both ends, such as the cover 40 shown in FIG. 5. In

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other words, the cover 40 is formed solely of a tubular body 42 having the internal ribs 38.

Another form of cover, generally identified by the numeral 44, is shown in FIG. 6. The cover 44 is formed of the same flexible rubberlike material as the cover 32 and includes a tubular body 46 having a closed end 48. However, in lieu of the annular ridges 38 of the cover 32, the interior surface of the body 46 of the cover 44 is merely provided with a roughened surface as at 50. This roughened surface, however, will interlock with the serrations formed on the surgical clamp jaw tip.

The cover with the roughened internal surface 50 may be formed solely of a body open at opposite ends. It is also to be understood that the serrations of the surgical clamp jaw may be other than the groove arrangement 30 shown in FIG. 4.

Returning once again to the cover 44 having a roughened internal surface 50, it is to be understood that the cover 44 may be formed by providing a roughened mold member which functions as a core for the cover 44 and which is dipped into a plastisol compound. The roughened surface 50 may also be formed by abrading the interior surface of the body 46 after the cover 44 has been formed.

Although only several preferred embodiments of the cover have been specifically illustrated and described herein, it is to be understood that minor variations may be made in the cover for a surgical clamp jaw without departing from the spirit and scope of the invention as defined by the appended claims.

Claims

1. A surgical clamp jaw cover for a clamp jaw having a serrated portion, said cover being characterized by a tubular body having internal annular ridges for interengaging with the serrated portion and retaining said cover on the clamp jaw.
2. A surgical clamp jaw cover according to claim 1 wherein said annular ridges are arranged in axially spaced relation.
3. A surgical clamp jaw cover according to claim 1 or 2 wherein said annular ridges are disposed substantially the full length of said body.
4. A surgical clamp jaw cover according to any one of the foregoing claims wherein said cover is formed of a flexible rubberlike material.
5. A surgical clamp jaw cover according to any one of the foregoing claims wherein said annular ridges are rounded in cross section.

6. A surgical clamp jaw cover according to any one of the foregoing claims wherein said body has opposite open ends.

7. A surgical clamp jaw cover according to any one of claims 1 to 5 wherein one end of said body is open, and an opposite end of said body is closed.

8. A surgical clamp jaw cover according to any one of claims 1 to 5 wherein one end of said body is open, and an opposite end of said body is closed by a rounded end.

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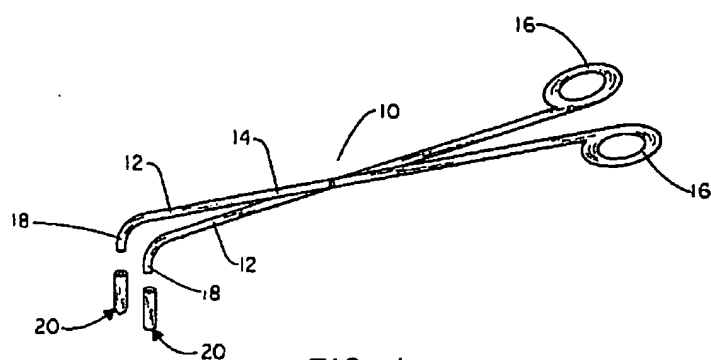


FIG. 1

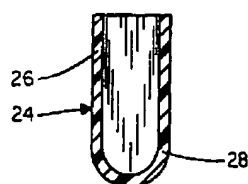
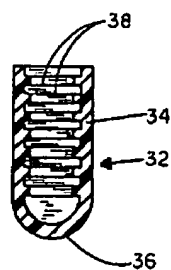
FIG. 2
(PRIOR ART)

FIG. 3

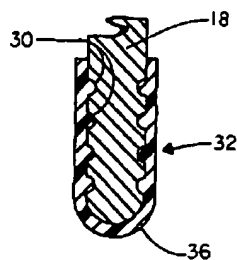


FIG. 4

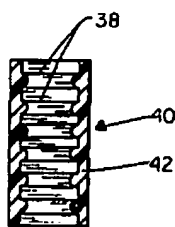


FIG. 5

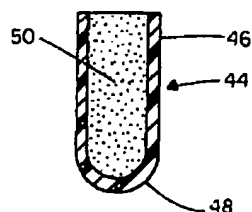


FIG. 6



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EUROPEAN SEARCH REPORT

Application Number

EP 91 12 1004

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 8)
X	CA-A-1 103 119 (MUEHNHANS) * claims 1,2; figure 3 *	1-8	A61B17/28
X	US-A-3 779 248 (KARMAN) * column 1, line 46 - line 53 * * column 2, line 33 - line 38; figure 6 *	1-8	
X	US-A-4 120 302 (ZIEGLER) * abstract; figures 1,8 *	1-8	
A	US-A-4 834 090 (MOORE) * abstract; figure 2 *	1,7,8	
A	US-A-4 452 244 (CHIN) * column 1, line 43 - column 2, line 9; figure 4 *	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl. 8)
			A61B B25B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 04 MARCH 1992	Examiner MOERS R.
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons # : number of the same patent family, corresponding document</p>			

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